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## Comment

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The paper by Santiago Camara, Lawrence Christiano, and Hüsni Dalgic is on an important and extensively researched question, and yet it provides us with new insights. It is rich in its analysis, both theory and empirics, covering a lot of ground. The authors develop a quantitative small open economy (SOE) model with several frictions and other interesting bells and whistles to study the international transmission of the US monetary policy. They have written an impressive paper that should be standard reading for graduate students in this area.

The authors start from two well-established facts. First, emerging markets (EMs) experience sharper contractions when US monetary policy tightens vis-à-vis the advanced economies (AEs) (Kalemli-Özcan 2019), and second, SOEs contract almost as much as the United States itself when the United States tightens the monetary policy (Dedola, Rivolta, and Stracca 2017; Akinci and Queralto 2018; Gourinchas 2018). The current literature explains these findings either with financial frictions (Cesa-Bianchi, Ferrero, and Li 2024; Shaghil, Akinci, and Queralto 2024) or with changing risk sentiments/risk shocks (Miranda-Agrippino and Rey 2020; Di Giovanni et al. 2022; Degaspero, Hong, and Ricco 2023) or both (Akinci, Kalemli-Özcan, and Queralto 2021). The authors provide a different explanation: declining US import demand. The authors show that, in model counterfactuals, once the decline in US demand is shut down, there is no international transmission. That is, if US consumers do not reduce their import demand when the Federal Reserve tightens the monetary policy, there will be no effect on Mexico. The overarching

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implication of this result is that the global financial cycle (Rey 2013) is not playing an important role in the international transmission of US monetary policy.

I will argue that this sole dominance of trade channel in international monetary transmission is theoretically possible but empirically not relevant. Let me start with the well-known episode of Taper Tantrum in May 2013. This episode was triggered with an exogenous and unanticipated US monetary policy shock. In fact, a key requirement to understanding monetary policy transmission mechanism (in the United States or globally) is to have an exogenous measure of US monetary policy as shown by a large literature, starting with the seminal work of Gertler and Karadi (2015).<sup>1</sup>

During this—widely accepted as an exogenous US tightening—episode of Taper Tantrum, US import demand did not decline at all; however, a very strong international transmission to EMs was observed with lower growth, capital outflows, exchange rate depreciations, and output declines, as extensively documented (e.g., Sahay et al. 2014; Bems et al. 2020; De Leo, Gopinath, and Kalemli-Özcan 2022). This episode clearly shows that the international transmission of US monetary policy does not need a fall in US import demand, at least for EMs that account for the half of world gross domestic product (GDP) and 60% of its growth (Obstfeld and Zhou 2023).

Of course, the Taper Tantrum episode does not deny the importance of declining US demand in international monetary transmission. In reality, most episodes of US monetary policy tightenings are associated with two types of declines: US consumers' import demand and US investors' retrieval to US assets with low demand for foreign assets (e.g., Kalemli-Özcan and Unsal 2023). In fact, it is extremely valuable that the authors are focusing on the declining US import demand channel, because most of the traditional literature on SOEs ignores this channel when the foreign (US) interest rate shock is exogenous and has no effect in the foreign (US) country. There is a parallel recent literature that also studies the same channel as that of the authors, that is, declining US imports, in global general equilibrium, where imports go down both in SOE and in the United States (e.g., Cesa-Bianchi et al. 2024; Shaghil et al. 2024). This new literature poses a challenge for the authors' model because, in spite of the fact that they incorporate the exact reduction in US import demand, these papers still show that the financial channel dominates the trade channel and that international transmission is not about fall in US import demand for Mexican exports but rather about a fall in

US investors' demand for Mexican and global assets that feeds back to lower global investment demand, leading to contractions in rest of the world.

Why does the authors' model miss this channel, in spite of the fact that they include several financial frictions? In the authors' model, a pure US interest rate shock ( $R^*$ ) will have no effect (figures 7 and 9 of the paper for AEs and Ems, respectively). In the aforementioned papers, a pure  $R^*$  shock will depreciate the non-US country currency—depressing net worth, increased spreads, and uncovered interest parity (UIP) premium—and lower domestic absorption through investment. Then this lower investment feeds back to asset prices and spreads. This feedback mechanism is not allowed in this paper, although the authors allow for financial frictions (balance sheet, dollar pricing, and UIP deviations). Hence, the middle loop of interactions in figure 1 is missed in the authors' framework, making the trade channel dominant. If the middle loop is allowed, then the financial channel becomes the dominant channel of international transmission due to the higher cost of credit, as shown by the aforementioned papers.

How can the feedback effect be this powerful? In the authors' model, with higher US interest rates, there is more demand for dollars, and this dollar demand depreciates the other currencies and hurts balance sheets with dollar debt and local currency assets. Such weak balance sheets will hurt investment. However, these effects are not quantitatively powerful in the authors' model compared with other quantitative models. When authors do a pure  $R^*$  shock, as the rest of the literature does, without

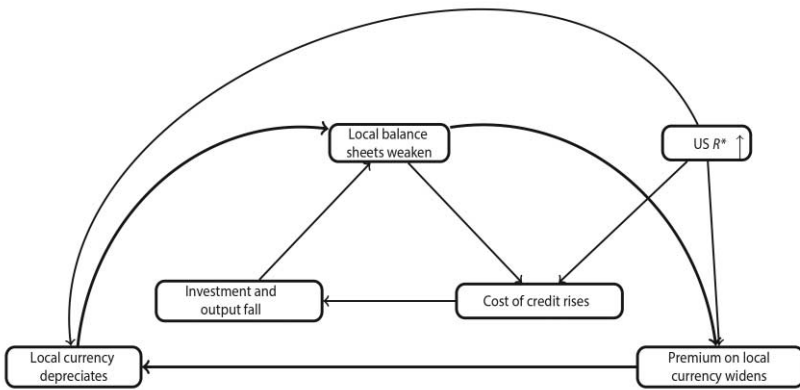


Fig. 1. Impact of a pure  $R^*$  shock in alternative frameworks.

a decline in US imports, even they observe a decline in SOE investment due to the above balance-sheet mechanism; this is not big and can easily be fixed with foreign exchange (FX) interventions that stop the depreciations. The key reason why the authors' model cannot generate large output declines through this financial channel is that their UIP wedge is small and does not feed back to firms' borrowing costs (hence a small decline in investment). The small UIP wedge can be offset with throwing more dollars to firms, and hence it plays a small role in the authors' setup.

I made this point in my discussion at the conference as I was worried that the way the authors treat UIP deviations (exogenous noise trader shocks) prevents their model from giving the finance channel a chance to dominate the trade channel. The authors have since revised their paper addressing this issue. They add UIP deviations and show that they not only can fit the model now to widely observed UIP puzzle of delayed overshooting but also shown excess overshooting, that is, high volatility in the exchange rate that also shows up in the UIP, especially of EMs. Since now their model can match these patterns; they argue that the model fits empirically observed UIP deviations and also fits even better to EM data, because the large depreciation of the EM exchange rate makes it easier for the model to match EM facts of large drops in GDP and investment in the wake of a US monetary tightening. Their main conclusion stays even after these changes, though the main channel of international transmission of US monetary policy is declining US imports. This is because UIP deviations quickly revert with mean reversion in exchange rates.

The data tell a different story on endogenous UIP deviations. The mean reversion is there in AEs, so UIP holds on average in AEs even though there is significant month-to-month variation. However, in EMs, it has never held with volatile and persistent time-varying movements, as documented in Kalemli-Özcan and Varela (2021), from the late 1990s to the present. These authors also show delayed and excessive overshooting, however; even though exchange rates go back to the original level after several months following a monetary policy shock, UIP stays elevated a long time, given the persistent interest rate differentials. The authors' linear approach will miss such persistence—hence the feedback from UIP to firms' borrowing costs. Their additional analysis confirms this. The linearization omits the fact that aversion to exchange rate uncertainty could prevent people from maximizing the expected return on their portfolio, that is, under UIP deviations, investors will hold less EM assets and more dollar assets even when EM assets offer more including the risk premium. The nonlinear models mentioned before

include this channel, leading to a strong feedback effect. The authors defend their linear approach by showing that the risk appetite only affects the pure interest rate effect. Hence, they conclude the risk appetite effect cannot be important, as it operates via a relatively unimportant channel. They detail this in appendix G, which shows that even risk appetite can have huge impact; in a linear model, its effect is minimized, hence leading to small effect of pure  $R^*$  shock. As a result, the feedback from UIP deviations to borrowing costs will be missed; hence, the decline in investment and output cannot be driven by the financial channel, and decline in output is attributed to drop in exports by construction.

Let me conclude by saying that I really enjoyed and learned a lot from this paper. It provides a lot of food for thought. The jury is still out on which channel dominates the international transmission of US monetary policy. The answer depends on the modeling approach: two different class of models, linear versus nonlinear deliver different channels dominating, trade versus finance, because different approaches give different weights to the role played by UIP deviations affecting firms' borrowing costs. In reality, both trade and finance channels are operative, but to be sure which one is dominant, we need a lot more work on the empirical front. This is a key research priority, as policy implications depending on which channel dominates the international transmission will starkly differ. If the UIP wedge has a small role and does not feed back into borrowing costs, then the optimal policy is an FX intervention. However, if there is a feedback to borrowing costs, then FX intervention is not optimal: It will partially absorb the shock and earn a carry profit, but this comes at the cost of output destabilization (e.g., Basu et al. 2020).

I started my discussion with the episode of Taper Tantrum in 2013, where even though US imports did not fall, we experienced international transmission of US monetary policy because there was a financial shock as picked up by UIP premia increasing, capital flowing out, and exchange rates depreciating. During 2022–2023, we also experienced a period of US monetary policy tightening with no fall in US imports and no observable international transmission (Kalemli-Özcan and Unsal 2023). The authors argue that this recent episode is further evidence for the trade channel dominance. I would argue, instead, that the recent episode showing the dominance of the financial channel as the key difference in 2023 from 2013 is the fact that the financial shock was missing in 2023. The 2022–2023 US tightening was not associated with an increasing UIP, capital outflows, and exchange rate depreciations for EMs, as was observed in 2013.

## Endnotes

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1. Simply looking at the effect of US interest rates on other countries' macro outcomes does not yield a readily interpretable empirical magnitude, because US interest rates are responding endogenously to the US economy. This literature is constantly advancing in terms of measuring exogenous US monetary policy shocks (e.g., Nakamura and Steinsson 2018; Stock and Watson 2018; Cieslak and Schrimpf 2019; Jaročiński and Karadi 2020; Bauer, Bernanke, and Milstein 2023; Bauer and Swanson 2023; Miranda-Agrippino and Ricco 2023).

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